

Unit 3 Polynomials (Honors)  
Algebra II Assignment Sheet

Date	Day	Objectives	Assignment
Fri., 2/25	1	→ Multiply & divide monomials → Vocabulary → Negative Exponents	WS
Mon., 2/28	2	→ Add, subtract, and multiply polynomials → Simple Factoring	p. 304 #s 36-50 E; p.259: 10 – 15
Tues., 3/1	3	→ Long & Short Division → Synthetic Division	p. 318 2, 6, 8, 18, 20, 21, 22 Quiz Review
Wed., 3/2 <i>Early Release</i>	4	<b>Quiz</b>	
Thurs., 3/3	5	→ Factoring trinomials → Factoring Special Cases	Practice Worksheet “5-4”
Fri., 3/4		<i>Writing Test Celebration 4<sup>th</sup> period</i> → Factoring practice	
Mon., 3/7	6	→ Pascal’s Triangle	Review #1 Exs 1 - 20
Tues., 3/8	7	<i>Writing Test in AM (all 10<sup>th</sup> graders)</i> → Pascal’s Triangle Revisited → Review	Finish Review #2 Exs 1-20
Wed., 3/9	8	<b>Unit 3 Test</b>	

## Unit 3 Polynomials Notes

### Exponent Rules

I. When multiplying the same base, **keep the base** and **add the exponents**.

Ex:  $a^2 \cdot a^3 = a^5$

Ex:  $2^3 \cdot 2^6 = 2^9$

II. When dividing the same base, **keep the base** and **subtract the exponents**.

Ex:  $\frac{b^{10}}{b^4} = b^6$

Ex:  $\frac{3^9}{3^7} = 3^2$

III. When raising a power to another power, **keep the base** and **multiply the exponents**.

Ex:  $(t^5)^2 = t^{10}$

Ex:  $(4^3)^6 = 4^{18}$

IV. When raising a product to a power, **raise all factors to that power**.

Ex:  $(ab)^m = a^m b^m$

Ex:  $(3x^2y^4)^3 = 27x^6y^{12}$

### Vocabulary:

**term:** an expression that contains numerals and/or variables to indicate a product and has whole number powers

**polynomial:** an expression with one or more terms

**monomial:** one term

**binomial:** two terms

**trinomial:** three terms

**constant:** monomials with no variables

**coefficient:** the numerical factor of a monomial

**degree of a term:** the sum of the exponents of all the variables in the term; every constant has degree zero and the number zero has “no degree”

**degree of a polynomial:** the degree of the term with the greatest degree

**like (similar) terms:** terms that differ only in their numerical coefficients; add only their coefficients & keep the variable and exponent  
(ex.  $2x^3y^5 + 7x^3y^5 = 9x^3y^5$ )

**scientific notation:** a number is in scientific notation when it is in the form  $a \times 10^n$  where  $1 \leq a < 10$  and “n” is an integer

## Factoring Steps:

1. Check for GCF first (greatest common factor)
2. If there are two terms, check for special cases
  - A. Difference of two squares  $a^2 - b^2 = (a + b)(a - b)$
  - B. Sum of two cubes  $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
  - C. Difference of two cubes  $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
3. If there are 3 terms:
  - a.) trial & error

## Negative Exponents:

Ex.  $x^{-3} = \frac{1}{x^3}$       Ex.  $\left(\frac{3}{4}\right)^{-2} = \left(\frac{4}{3}\right)^2 = \frac{16}{9}$

## Synthetic Division:

use when dividing a polynomial by a binomial

Ex.  $(3x^3 - 15x^2 - 11x + 5) \div (x - 5)$

Set up as follows: 
$$\begin{array}{r|rrrr} 5 & 3 & -15 & -11 & 5 \\ \hline \end{array}$$

(put in zeros for missing terms in the dividend)

Ex.  $5y^3 + y^2 - 7 \div y + 1$  would be set up as follows

$$\begin{array}{r|rrrrr} -1 & 5 & 1 & 0 & -7 \\ \hline \end{array}$$

Ex. Is  $(a + 1)$  a factor of  $(a^4 - 5a^3 - 13a^2 + 53a + 60)$ ? means if you divide by  $(a + 1)$  will the remainder be zero. You could use synthetic division here.